C. Remarks

The claims are 1-3 and 5-27 with claims 1, 7, 13, 16, 17, 22 and 27 being independent. Claims 7-12 and 17-26 have been withdrawn from consideration as being directed to a non-elected invention. Claims 1 and 16 have been amended to better define the present invention. Support for this amendment may be found, inter alia, in the specification at page 19, lines 5-6. Claim 13 has been amended solely as to matters of form. New claim 27 has been added. It is based on claim 1 and the disclosure in the specification at page 21, lines 16-26. Reconsideration of the claims is expressly requested.

Applicants again request that upon an indication of allowability of claims 1-6 and 13-16, the Examiner rejoin non-elected claims 7-12 and 17-26 under M.P.E.P. § 821.04. Applicants request the Examiner to provide them with sufficient time to amend the non-elected claims, if need be, to be commensurate in scope with the allowed claims.

Claims 1, 2 and 16 stand rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent Application Publication No. 2003/0037730 A1 (Yamasaki). Claims 3, 5 and 13-15 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious from Yamasaki in view of U.S. Patent No. 6,155,289 (Carlsen). Claim 6 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Yamasaki in view of U.S. Patent No. 5,417,770 (Saitoh). The grounds of rejection are respectfully traversed.

The present invention is characterized in that the temperature sensor is provided on the side downstream to the piping connection part of the evacuation piping to detect leaks from welds and joints from piping connecting portions of the apparatus. Oxygen, supplied from the atmosphere at the leak-generating portion, reacts with unreacted

reaction gas for film formation, thereby generating a temperature rise. Leak generation can be detected by measuring such temperature rise with a temperature sensor. Since leaks are likely to occur at connecting portions of the evacuation piping, a temperature sensor is provided on the side downstream to the piping connection part of the evacuation piping, whereby leak generation can be best detected. As shown in Figs. 1B, 5B and 6B where flange joints, welds and the like are present in the first or second piping connection part, leaks can occur and a sensor is provided downstream of a pipe connection joint or flange (part) to detect temperature rise from reaction of oxygen with unreacted film-forming gases.

Yamasaki discloses that a high temperature trap is provided between a chamber and a vacuum pump and a low temperature trap is provided between a vacuum pump and a decontaminating device, respectively, and a temperature sensor is provided to control a temperature of the high temperature trap 28 (see paragraph [0084]). In Fig. 4 of the Yamasaki, sensor 64 is mounted on trap body 56. The high temperature trap is typically heated to 180°C to 300°C and, especially to 200°C (see paragraphs [0060] and [0086]).

As recited in claims 1 and 16, the instant temperature sensor is capable of measuring temperatures from about 0 to 150°C. Applicants respectfully submit that Yamasaki fails to disclose or suggest such a temperature sensor. This is clearly evident from the type of temperature monitoring conducted in Yamasaki and the above-recited temperatures in the high temperature trap.

In present Fig. 2, for example, a leak caused a temperature rise of 20°C, from 30°C to 50°C. Within the large, heated trap employing a heater coil to heat body 56

and trapping plates 60 as in Yamasaki, which is kept at from 180°C to 300°C, the very small energy generated by oxygen reacting with unreacted gases would clearly be insufficient to cause an entire trap to jump 20°C. Further, in the trap, substances in the exhaust gases are already reacting and decomposing, which would not make it possible to distinguish between that and a leak.

With respect to claim 13, the Examiner acknowledged that Yamasaki does not teach the presently claimed leak judgment means, which judges whether a leak has occurred based on the temperature measurement conducted by a sensor located downstream to the pipe connection part. However, the Examiner has alleged that Carlsen teaches such means and that it would have been obvious to employ this means in Yamasaki. Applicants respectfully disagree.

Carlsen discloses a mechanism for detecting a back flow of oxygen when a decompression cylinder is used. A leak is detected when a gas back-flows by heat caused by a reaction of PH_3 with O_2 and a gas supply valve is closed to detect the leak. However, Carlsen neither discloses nor suggests that a temperature sensor is provided on a side downstream to a connection portion of an evacuation piping.

Applicants note that the temperature sensor 60 is attached to the sub-atmospheric gas source 14. The leak or back flow is detected on the basis of the temperature changes in the sub-atmospheric gas source 14, which is clearly not downstream to the piping connection part (see col. 5, lines 15-27). Therefore, even if the detection mechanism of Carlsen were used in Yamasaki, the resulting combination would not result in the presently claimed invention, because it would lack a temperature sensor located downstream to the piping connection part the temperature measurement from

which is used by the leak judgment means to determine whether a leak has occurred. The operation of the detection mechanism as taught by Carlsen requires the presence of the temperature sensor at a location other then the one presently claimed.

The deficiencies of Yamasaki and Carlsen are not cured by Saitoh. This document was cited only for the disclosure regarding a means for moving a belt. Like Yamasaki and Carlsen, Saitoh does not disclose or suggest a temperature sensor capable of detecting temperatures from about 0°C to 150°C and a leak judgment means as presently claimed.

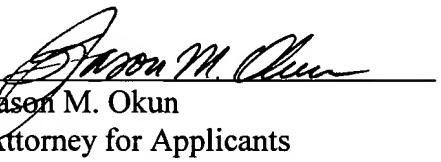
Applicants respectfully submit that new claim 27 is patentable over the cited references. Specifically, neither Yamasaki, Carlsen nor Saitoh discloses or suggest placing a temperature sensor 5 to 20 cm downstream to the piping connection part. This placement cannot be deemed an optimization of variables, because the prior art does not teach that the distance at which the temperature sensor is placed downstream to the piping connection part is a result-effective variable. Neither is this placement a matter of design choice, because it substantively affects the accuracy of leak detection.

Wherefore, Applicants submit that none of the references, whether considered alone or in any proper combination, discloses or suggests the present claimed invention nor renders it unpatentable. Accordingly, it is respectfully requested that the claims be allowed and that the case be passed to issue.

This Amendment After Final Rejection should be entered because it places the case in allowable form. Alternatively, it places the case in a better form for a possible appeal.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



Jason M. Okun
Attorney for Applicants
Registration No. 48,512

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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